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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/678,305	10/06/2003	Joseph Scott Digangi	4345-35	4161
23117	7590	12/15/2005	EXAMINER	
NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			TO, TOAN C	
			ART UNIT	PAPER NUMBER

3616

DATE MAILED: 12/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/678,305	DIGANGI ET AL.	
	Examiner	Art Unit	
	Toan C. To	3616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>9-22-2005</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendment filed September 22, 2005 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: "a pressure wave that travels through said pressure vessel at sonic velocity" as recited in claims 1 and 13.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-5, 8-10, 12, 13-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Rink et al (U.S. 5,964,479).

Rink et al discloses a gas generator comprising: a pressure vessel (314) containing a gas under a first predetermined pressure (pressure of mixture gas in chamber 312); an initiator housing (360) secured to and closing one end of said pressure vessel (314), the initiator housing (360) having an opening (346) at the inner end thereof closed by an initiator rupture disc (348) constructed to rupture at a second predetermined pressure in the initiator housing (360) greater than the first predetermined pressure, the second predetermined pressure being sufficient to create a

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pressure wave that travels through the pressure vessel; a micro gas generator or initiator (370) disposed within the initiator housing; a manifold (326) secured to and closing the other end of said pressure vessel (314), the manifold (326) having an opening (336) at the inner end thereof closed by a manifold rupture disk (344) constructed to rupture at a third predetermined pressure greater than the first predetermined pressure; the manifold rupture disk (344) being directly exposed to the interior of the pressure vessel in the path of the pressure wave; whereby upon the firing of the micro gas generator or initiator, the gas pressure in the initiator housing (360) increases to or exceeds the second predetermined pressure to rupture the initiator rupture disk (346) and create a pressure wave that travels through the pressure vessel to impinge on the manifold rupture disk (344) to create a localized pressure at the manifold rupture disk (344) that equals or exceeds the third predetermined pressure to rupture the manifold rupture disk and allow flow of gas through the manifold (326) before the gas in the pressure vessel is significantly heated and pressurized by the gas flow from the initiator housing.

As to claims 2-3, Rink et al discloses a gas generator, wherein the first predetermined pressure is approximately 4,000-8,000 psi (see column 6, line 55, and column 13, line 52), and the second predetermined pressure is approximately two times higher than said first predetermined pressure (as best shown in figure 6, the initiator rupture disc 346 fails slightly before 150 ms when the pressure/second pressure in the reaction chamber is approximately 15000 psi which is approximately two time higher than the initial pressure/first pressure in the stored gas chamber); wherein the third

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predetermined pressure is approximately 1.8 times higher than the first predetermined pressure (see column 14, lines 45-46).

As to claims 4-5, Rink et al discloses a gas generator, wherein said gas under a first predetermined pressure is a gas mixture of argon and helium or nitrogen and helium (see column 5, lines 15-32).

As to claim 8-9, Rink et al discloses a gas generator, wherein the initiator housing (360) is welded to the pressure vessel (314); the manifold (326) is welded to the pressure vessel (314).

As to claim 10, Rink et al discloses a gas generator, wherein the manifold (326) is constructed to provide for radial flow (340) therefrom.

With respect to claim 12, as best understood by the examiner, Rink et al discloses a gas generator, wherein the micro-gas generator (370) is disposed within the initiator housing (360) and is constructed to generate sufficient heat to prevent liquification of the gas in the pressure vessel upon rupture of the initiator rupture disk (346) and the manifold rupture disk (344).

As to claim 13, Rink et al discloses a method of generating gas for a device to be inflated or pressurized, comprising: providing a pressure vessel (314) containing a gas under a first predetermined pressure; providing an initiator housing (360) closing one end of the pressure vessel (314) and having an opening (346) at the inner end thereof closed by an initiator rupture disk (348) constructed to rupture at a second predetermined pressure in said initiator housing (360) greater than the first predetermined pressure; providing a micro-gas generator or initiator (370) within the

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initiator housing (360); providing a manifold (326) closing the other end of the pressure vessel, said manifold (326) having an opening (336) at the inner end thereof closed by a manifold rupture disk (344) constructed to rupture at a third predetermined pressure greater than the first predetermined pressure; and firing the micro-gas generator or initiator (370) to increase the gas pressure in the initiator housing (360) to a value equal to or exceeding the second predetermined pressure to rupture the initiator rupture disk (344) and create a pressure wave that travels through the pressure vessel (314) to create a localized pressure at the manifold rupture disk (344) that equals or exceeds the third predetermined pressure to rupture the manifold disk (344) and allow flow of gas through the manifold (326) before the gas in said pressure vessel is significantly heated and pressurized by the gas flow from the initiator housing.

As to claims 14-15, Rink et al discloses a method of generating gas, wherein the first predetermined pressure is approximately 4,000-8,000 psi (see column 6, line 55, and column 13, line 52), and the second predetermined pressure is approximately two times higher than said first predetermined pressure (as best shown in figure 6, the initiator rupture disc 346 fails slightly before 150 ms when the pressure/second pressure in the reaction chamber is approximately 15000 psi which is approximately two time higher than the initial pressure/first pressure in the stored gas chamber); wherein the third predetermined pressure is approximately 1.8 times higher than the first predetermined pressure (see column 14, lines 45-46).

As to claims 16-18, Rink et al discloses a method of generating gas, wherein said gas under a first predetermined pressure is a gas mixture of argon and helium or

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nitrogen and helium (see column 5, lines 15-32); wherein the flow of gas through said manifold upon rupture of said manifold rupture disk is at a temperature of less than approximately 21.degree. C. (in Rink et al, the gas generator 310 is similar with the gas generator of the present invention in structures and material of gas mixture disposed therein; therefore, the temperature of gas flows through the diffuser 310 of Rink et al should be similar to the temperature as claimed).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rink et al in view of Starozihitsky et al (U.S. 6,364,355).

Rink et al discloses every element of the invention as discussed above except that the pressure vessel is formed of a lightweight light strength material; wherein the material is low carbon steel or aluminum.

Starozihitsky et al teaches the invention wherein the pressure vessel is formed of a lightweight light strength material; wherein the material is low carbon steel or aluminum. It would have been obvious design choice to one having ordinary skill in the art at the time the invention was made to make the pressure vessel of Sink et al by low carbon steel material as taught by Starozihitsky et al in order to ensure performance of

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the gas generator for protecting occupant, since it has been held to be within the general skill in of a worker in the art to select a known material on the basis of its suitability for the indented use as a matter of obvious design choice.

3. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rink et al in view of Green et al (U.S. 6,286,864)

Rink et al discloses every element of the invention as discussed above except that the manifold is constructed to provide for axial flow therefrom.

Green et al teaches the invention wherein the manifold (42) is constructed to provide for axial flow (46) therefrom. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the gas generator of Rink et al by replaced their radial openings with the axial openings as taught by Green et al in order to inflate the occupant protection device for protecting occupant.

Response to Arguments

4. Applicant's arguments filed September 22, 2005 have been fully considered but they are not persuasive. The prior art as to Rink et al still read on the claimed limitations.

In response to applicant's argument that Rink does not disclose the claimed recitation as to "a pressure wave that travel through the pressure vessel at sonic velocity", applicant is noted that such recitation is considered new matter added to the disclosure.

In response to applicant's argument that Rink does not disclose the claimed recitation such as a pressure wave that travel through the pressure vessel to impinge on

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the manifold rupture disk and create a localized pressure at the manifold rupture disk to rupture it and allow flow of gas through the manifold before the gas in the pressure vessel is significantly heated and pressurized by the gas flow from the initiator housing, the examiner respectfully disagrees because the following reasons: (1) the mentioned claimed recitation above is considered a functional claimed recitation, and the functional recitation has been given little patentable weight because they fail to add any structural limitations and are thereby regarded as intended use language. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. *In re Casey*, 152 USPQ 235 (CCPA 1967); *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). (2) although, in Rink, before the manifold rupture disk 344 is ruptured, the mixture gas in the chamber 312 is already heated and pressurized, but the increasing in temperature and pressure of the mixture gas in the chamber 312 is not considered significant; in other words, the localizing pressure ruptured the manifold disk 344 before the mixture gas is significant heated.

In response to applicant's argument that the manifold disk of Rink is covered by a throttle 330 that prevents a pressure wave from impinge on the manifold disk 344, the examiner respectfully disagrees because the throttle 330 is provided with a plurality of openings 336 these allow the manifold disk in direct contact with the pressure wave such that the pressure wave impinges the manifold disk 344 to rupture it.

With respect to applicant's argument to the rejections of the claims under 35 U.S.C 103(a) as being unpatentable over Rink et al in view of Starozhitsky et al, and Green et al, the examiner respectfully disagrees because the amendments to the based claims 1 and 13 do not overcome the prior art as to Rink et al.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan C. To whose telephone number is (571) 272-6677. The examiner can normally be reached on Mon-Fri (8:00-5:00).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Dickson can be reached on (571) 272-6669. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTo
December 8, 2005

 12/12/05
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SUPERVISORY PATENT EXAMINER
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